July 18, 1960

Dr. Richard Conrad Emmons
Department of Geology
University of Wisconsin
Madison 6, Wisconsin

Dear Dr. Emmons:

During the past two years I have been interested in the formulation and construction of suitable experiments for the examination of planetary surfaces with a view to the detection of extraterrestrial life. The experiment that has taken first place in our current thinking is the landing of a microscope with suitable accessories for the capture of samples and for the transmission of pictorial information back to the earth. For various reasons there would be some advantage to conducting such microscopy in ultraviolet light for the detection of living cells and our efforts are now concentrated at evaluating such a device.

During these deliberations which are primarily directed toward missions to Mars and perhaps Venus, the thought presented itself that television microscopy might also furnish unique and invaluable information for the geochemical and geophysical assessment of celestial targets. This thought might be particularly applicable to lunar experiments. While a number of other geophysical experiments have been suggested, and some like the seismometer have been well advanced, I have heard no discussion of the possible use of microscopic techniques for the study of the lunar surface. On the other hand it seems likely that many questions, such as its texture and the role of meteoritic infall in its formation could be approached by such techniques.

I was advised to write to you as an enthusiastic and experienced exponent of microscopic petrology to ask your suggestions on who might be interested in pursuing such experiments and to introduce the possibility of some cooperative effort. From an instrumental point of view, there would obviously be a great deal in common between the examination of Martian soil for microorganisms and the examination of planetary and lunar deposits for their micro-petrological structure.

Yours sincerely,

Joshua Lederberg
Professor of Genetics

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